REMARKS

Claims 1-9, 11-14, 16-33, 35-38, 40-42, and 44 are pending in the present Application. Claims 7-8 have been canceled and claims 1, 33, 38, 42, and 44 have been amended, leaving Claims 1-6, 11-14, 16-33, 35-38, 40-42, and 44 for consideration upon entry of the present Amendment. No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Amendments

Claims 1, 33, 38, 42, and 44 have been amended to contain the language "wherein the substrate layer is prepared by injection molding the blend at a melt temperature of about 330 to about 370°C into a mold having a mold temperature of about 90 to about 130°C and a clamp tonnage of greater than or equal to about 12 tons; and wherein the substrate layer has a land and groove replication of greater than or equal to about 90 percent." Support for the amendment can be found in the Specification as filed and in originally filed claims 7 and 8.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-3, 5-9, 11-14, 16-21, 27-30, 42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Patent No. 4,845,142 to Niwano, et al. (Niwano) and United States Publication No. 2003/0113671 to Ohgo (Ohgo), further in view of United States Patent No. 6,183,829 to Daecher, et al. (Daecher).

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

Claims 1-3, 5-9, 11-14, 16-21, 27-30, 42, and 44 are not obvious over Niwano, Ohgo, and Daecher as these references fail to teach or suggest all elements of the instant claims and there is no expectation that the modification of the references would be successful. Each of claims 1 and 42 requires the data storage medium to comprise a poly(arylene ether) resin and poly(alkenyl aromatic) resin substrate comprising a pitch of about 0.05 to about 0.35 micrometer. Claim 44

requires the data storage medium to comprise a poly(arylene ether) resin and poly(alkenyl aromatic) resin substrate comprising a pitch of about 0.275 to about 0.35 micrometer.

Ohgo does teach a narrow pitch size. However, one of ordinary skill in the art would not look to the teachings of Ohgo for narrow pitch sizes of a poly(arylene ether)/poly(alkenyl aromatic) blend as Ohgo does not teach molding this particular combination of thermoplastics with such exacting pitch size. Daecher discloses polystyrene-poly(phenylene oxide) as merely one resin in a laundry list of resins, although it generally discloses a sheet having a pitch of greater than 0.35 micrometer. [1] Niwano discloses disk substrates comprising an aromatic vinyl monomer and a polyphenylene ether where the pitch size is 1.6 micrometers. Thus, one of ordinary skill in the art would not combine the pitch sizes of Ohgo with the resins of Daecher and Niwano as the large pitch sizes disclosed in Daecher and Niwano would not lead one of ordinary skill in the art to prepare even narrower pitch sizes, especially as this would require more exacting processing conditions to form the lands and grooves and would require more precise surfaces of the substrate in order to allow for the distinct set of lands and grooves to provide data storage.

The Examiner indicated in the present Office Action that

> The arguments that the melted (liquid) resin could not be injection molded Niwano et al. '142 to form the finer features taught in Ohgo '671, who also described molding of (molten) resins is without any support. . .

(Office Action dated 4/20/07, page 4). The Applicants respectfully disagree, especially in view of claims 1, 42 and 44 as currently amended. Independent claims 1, 42, and 44 have been amended to contain the language "wherein the substrate layer is prepared by injection molding the blend at a melt temperature of about 330 to about 370°C into a mold having a mold temperature of about 90 to about 130°C and a clamp tonnage of greater than or equal to about 12 tons; and wherein the substrate layer has a land and groove replication of greater than or equal to about 90 percent."

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1 The definition of "pitch" in the present application is "the pitch is measured from the center of the groove to the center of an adjacent groove" (Specification, Paragraph [0108]). Therefore, the pitch is the total diameter of the land, half the diameter of the groove on one side of the land and half the diameter of the grove on the other side of the land. As Daecher teaches the spot size of 0.4 to 10 micrometers, the smallest diameter of the land is 0.4 micrometers. Thus, the dimension of the land, plus the dimensions of half the diameter of the grooves on either side of the land results in a pitch of greater than 0.35 micrometer.

None of the references teach or suggest injection molding the claimed blend under these specific conditions. Neither do the references teach the land and groove replication to be greater than or equal to about 90 percent. As shown in the data of Table 4 of the Specification as filed, the particular molding conditions have a clear effect on land and groove replication as percent replication varied from 50.7 percent (Run 22) up to 98.8 percent (Run 19) depending upon the melt temperature, mold temperature, and clamp tonnage. The smaller the land and grooves are, the greater the need for the correct molding conditions to provide accurate mold replication to create a substrate suitable for data media storage. As none of the references teach or suggest how to injection mold a poly(arylene ether) resin and poly(alkenyl aromatic) resin substrate to achieve 1) the exacting pitch sizes, and 2) the land and groove replication required by claims 1, 42, and 44, these claims have not been rendered obvious over Niwano, Daecher, and Ohgo. The Applicants respectfully request reconsideration and removal of the rejections.

Claims 1-9, 11-14, 16-21, 25, 27-31, 33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Niwano and Ohgo, in view of Daecher, further in view of United States Publication No. 2003/0003261 to Saito, et al. (Saito).

Independent claim 33 requires the data storage medium to comprise a poly(arylene ether) resin and poly(alkenyl aromatic) resin substrate comprising a pitch of about 0.05 to about 0.35 micrometer and independent claim 38 requires the pitch to be about 0.2 to about 0.35 micrometer. Furthermore, claims 33 and 38 have been amended to contain the language "wherein the substrate layer is prepared by injection molding the blend at a melt temperature of about 330 to about 370°C into a mold having a mold temperature of about 90 to about 130°C and a clamp tonnage of greater than or equal to about 12 tons; and wherein the substrate layer has a land and groove replication of greater than or equal to about 90 percent."

As mentioned above, one of ordinary skill in the art would not be motivated to use the narrow pitch size of Ohgo with the materials of Niwano or Daecher as the large pitch sizes disclosed in Daecher and Niwano would not lead one of ordinary skill in the art to prepare even narrower pitch sizes, especially as this would require more exacting processing conditions to form the lands and grooves and would require more precise surfaces of the substrate in order to allow for the distinct set of lands and grooves to provide data storage. Furthermore, these references fail

to teach or suggest the specific injection molding conditions and percent replication that is required by the claims. Particularly, as shown in the data of Table 4 of the Specification as filed, molding conditions have a clear effect on land and groove replication.

Saito does not provide any additional teaching or suggestion that would lead one to mold the resin of Niwano or Daecher with the small pitch size of Ohgo. Saito does not disclose or suggest molding poly(arylene ether) resin and poly(alkenyl aromatic) resin with a narrow pitch size. Furthermore, Saito, like the other references, fails to teach or suggest the specific injection molding conditions and percent replication that is required by the claims.

Accordingly, the Applicants respectfully request reconsideration and removal of the rejections.

Claims 1-9, 11-14, 16-31, 33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Niwano and Ohgo, in view of Daecher and Saito, further in view of JP 2000-351891 to Ueda et al. (Ueda) or EP 1178068 to Ito et al. (Ito) combined with United States Publication No. 2001/0039313 to Ogawa et al. (Ogawa).

One of ordinary skill in the art would not be motivated to use the narrow pitch size of Ohgo with the materials of Niwano or Daecher as the large pitch sizes disclosed in Daecher and Niwano would not lead one of ordinary skill in the art to prepare even narrower pitch sizes, especially as this would require more exacting processing conditions to form the lands and grooves and would require more precise surfaces of the substrate in order to allow for the distinct set of lands and grooves to provide data storage.

Saito, Ueda, Ito and Ogawa do not provide any additional teaching or suggestion that would lead one to mold the resin of Niwano or Daecher with the small pitch size of Ohgo. Saito, Ueda, Ito and Ogawa do not disclose or suggest molding poly(arylene ether) resin and poly(alkenyl aromatic) resin with a narrow pitch size.

Furthermore, as mentioned above for Niwano, Daecher, Ohgo, and Saito; the Ueda, Ito, and Ogawa references fail to teach or suggest the specific injection molding conditions and percent replication that is required by the claims. Accordingly, reconsideration and removal of the rejections is respectfully requested.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Niwano and Ohgo, in view of Saito, Daecher, Ueda or Ito, and Ogawa, further in view of United States Publication No. 2002/0176957 to Mino et al. (Mino), or WO 03/021588 to Dris et al. (Dris).

One of ordinary skill in the art would not be motivated to use the narrow pitch size of Ohgo with the materials of Niwano or Daecher as the large pitch sizes disclosed in Daecher and Niwano would not lead one of ordinary skill in the art to prepare even narrower pitch sizes, especially as this would require more exacting processing conditions to form the lands and grooves and would require more precise surfaces of the substrate in order to allow for the distinct set of lands and grooves to provide data storage.

Saito, Ueda, Ito, Ogawa, Mino, and Dris do not provide any additional teaching or suggestion that would lead one to mold the resin of Niwano or Daecher with the small pitch size of Ohgo. Saito, Ueda, Ito, Ogawa, Mino, and Dris do not disclose or suggest molding poly(arylene ether) resin and poly(alkenyl aromatic) resin with a narrow pitch size.

Furthermore, as mentioned above for Niwano, Daecher, Ohgo, Saito, Ueda, Ito, and Ogawa; Mino and Dris fail to teach or suggest the specific injection molding conditions and percent replication that is required by the claims. Reconsideration and removal of the rejections is respectfully requested.

Claims 1-9, 11-14, 16-21, 27-30, 42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Publication No. 2002/0094455 to Feist, et al. (Feist), Daecher and Ohgo. Claims 1-9, 11-14, 16-21, 25, 27-31, 33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Feist, Daecher and Ohgo, in view of Saito.

As discussed above, one of ordinary skill in the art would not be motivated to use the narrow pitch size of Ohgo with the materials of Daecher as the large pitch sizes disclosed in Daecher would not lead one of ordinary skill in the art to prepare even narrower pitch sizes, especially as this would require more exacting processing conditions to form the lands and grooves and would require more precise surfaces of the substrate in order to allow for the distinct set of lands and grooves to provide data storage.

Feist and Saito do not provide any additional teaching or suggestion that would lead one to mold the resin of Daecher with the small pitch size of Ohgo.

Furthermore, as mentioned above, all these references fail to teach or suggest the specific injection molding conditions and percent replication that is required by the claims. Reconsideration and removal of the rejections is respectfully requested.

Claims 1-9, 11-14, 16-21, 27-30, 42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Publication No. 2002/0197438 to Hay et al. (Hay), Daecher and Ohgo.

As discussed above, one of ordinary skill in the art would not be motivated to use the narrow pitch size of Ohgo with the materials of Daecher as the large pitch sizes disclosed in Daecher would not lead one of ordinary skill in the art to prepare even narrower pitch sizes, especially as this would require more exacting processing conditions to form the lands and grooves and would require more precise surfaces of the substrate in order to allow for the distinct set of lands and grooves to provide data storage.

Hay does not provide any additional teaching or suggestion that would lead one to mold the resin of Daecher with the small pitch size of Ohgo.

Furthermore, as with Daecher and Ohgo, Hay fails to teach or suggest the specific injection molding conditions and percent replication that is required by the claims. Reconsideration and removal of the rejections is respectfully requested.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over either Feist or Hay combined with Daecher and Ohgo, further in view of Ueda or Ito combined with Ogawa.

As discussed above, none of these references teach or suggest the specific injection molding conditions and percent replication that is required by the current claims. As each and every limitation of the claims is not taught or suggested by the references, the Applicants respectfully request reconsideration and removal of the rejections.

Double Patenting

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-32 of copending Application No. 10/648,540 (US 2005/0046056) in view of Feist et al. '455, Daecher et al. '829 and Ohgo '671.

Since neither the present claims nor the claims of copending Application No. 10/648,540 have been patented, there is no way that double patenting can be determined (nothing is patented and there is no way to compare the final claims until one of the cases has been patented and the other claims are otherwise allowable). Hence, the Applicants respectfully request that the Examiner withdraw these obviousness double patenting rejections until the claims are in final form and otherwise in condition for allowance, and the case over which double patenting is alleged is allowed. Until such time, there is no double patenting and no way to determine double patenting.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 7-16, 18-24 & 26-106 of US Patent 7,041,780 (which matured from copending Application No. 10/648,640 (US 2005/0049362), in view of Feist et al. '455, Daecher et al. '829 and Ohgo '671.

Neither the claims of the US Patent 7,041,780 nor the references Feist, Daecher, or Ohgo teach or suggest the required molding conditions and percent replication of the instant claims. Thus, reconsideration and removal of the double patenting rejection is requested.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-49 of copending Application No. 10/648,647 (US 2005/0049333) in view of Feist et al. '455 and Ohgo '671.

The Applicants note that Application No. 10/648,647 has matured into U.S. Patent No. 7,256,225. Neither the claims of the US Patent 7,256,225 nor the references Feist or Ohgo

teach or suggest the required molding conditions and percent replication of the instant claims. Thus, reconsideration and removal of the double patenting rejection is requested.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-29 of copending Application No. 10/648,604 (US 2005/0046070) in view of Feist et al. '455, Daecher et al. '829 and Ohgo '671.

The Applicants note that Application No. 10/648,604 has matured into U.S. Patent No. 7,244,813. Neither the claims of the US Patent 7,244,813 nor the references Feist, Daecher, or Ohgo teach or suggest the required molding conditions and percent replication of the instant claims. Thus, reconsideration and removal of the double patenting rejection is requested.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-49 of copending Application No. 11/151,494 (US 2005/0233151) in view of Feist et al. '455, Daecher et al. '829 and Ohgo '671.

Since neither the present claims nor the claims of copending Application No. 11/151,494 have been patented, there is no way that double patenting can be determined (nothing is patented and there is no way to compare the final claims until one of the cases has been patented and the other claims are otherwise allowable). Hence, the Applicants respectfully request that the Examiner withdraw these obviousness double patenting rejections until the claims are in final form and otherwise in condition for allowance, and the case over which double patenting is alleged is allowed. Until such time, there is no double patenting and no way to determine double patenting.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-37 of copending Application No. 10/063,004 (US 2002/009445) in view of Daecher et al. '829 and Ohgo '671.

The Applicants note that Application No. 10/063,004 has matured into U.S. Patent No. 7,179,551. Neither the claims of the US Patent 7,179,551 nor the references Feist, Daecher, or Ohgo teach or suggest the required molding conditions and percent replication of the instant claims. Thus, reconsideration and removal of the double patenting rejection is requested.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-15 of copending Application No. 10/922,194 (US 2005/0064129) in view of Feist et al. '455, Daecher et al. '829 and Ohgo '671.

It is noted by the Applicants that Application No. 10/922,194 has received a Notice of Allowance. Neither the claims of US Application No. 10/922,194 nor the references Feist, Daecher, or Ohgo teach or suggest the required molding conditions and percent replication of the instant claims. Thus, reconsideration and removal of the double patenting rejection is requested.

Claims 1-9, 11-14, 16-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/986,611 (US 2005/0129953) in view of Feist et al. '455, Daecher et al. '829 and Ohgo '671.

Neither the claims of US Application No. 10/986,611 nor the references Feist, Daecher, or Ohgo teach or suggest the required molding conditions and percent replication of the instant claims. Thus, reconsideration and removal of the double patenting rejection is requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance are requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 50-1131.

Respectfully submitted,

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